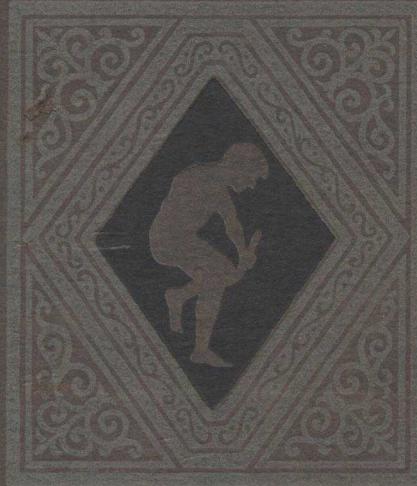


CHICAGO STEEL BENDING BRAKES

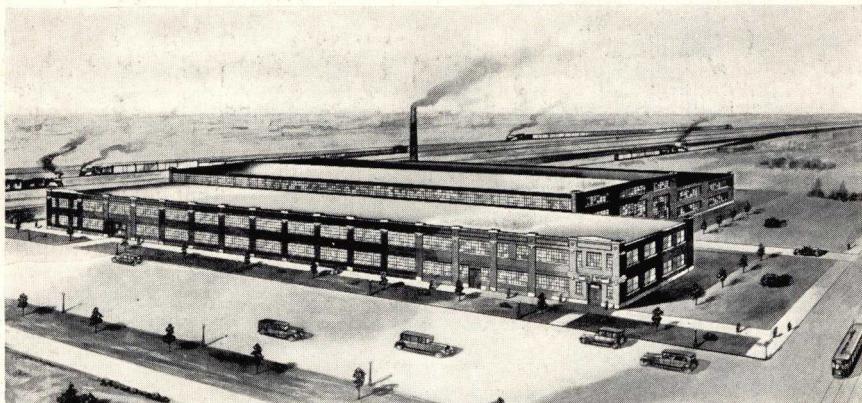


Dreis & Krump Mfg Co
CHICAGO • U.S.A

CHICAGO STEEL BENDING BRAKES

Catalog No. 25

DREIS & KRUMP MFG. CO.
74th and Loomis Streets
CHICAGO, U. S. A.



New modern factory devoted to the manufacture of Chicago Steel Bending Brakes. Located between Loomis and Bishop Streets and West 74th and 75th Streets on the Belt Railway, Chicago, U. S. A.



Highest Award St. Louis, 1904



Highest Award San Francisco, 1915

THIS catalog embodies the most complete and highly developed line of bending brakes on the market. Over twenty-two thousand satisfied users is conclusive proof of their superiority.

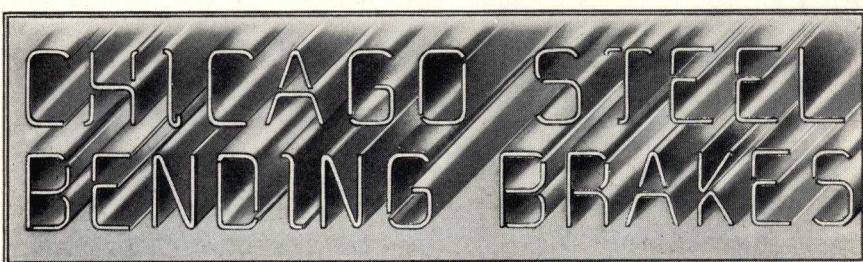
For over twenty-five years our organization has been devoted to producing bending brakes and our machines are now the recognized standard of their kind.

Guarantee

Our products are guaranteed for a period of one year from date of shipment and any part proving defective within that time will be replaced free of cost, f. o. b. Chicago.

Weights

Approximate weights are given so that the intending purchaser may estimate the freight charges.



THIS illustration is an example of the unlimited variety of bending which is possible on Chicago Steel Bending Brakes. It is impossible to show or describe all the work for which they are adapted. To those familiar with construction and operation of these machines it is unnecessary to explain their productive possibilities.

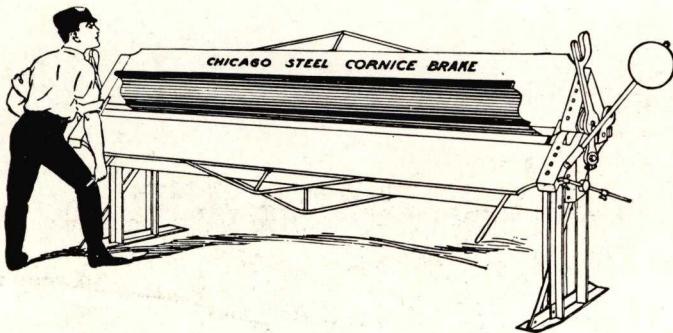
Various types of brakes for different classes of work are described on succeeding pages and we can make changes in construction or design special brakes for odd or difficult bending.

Chicago Steel Bending Brakes are designed and built by practical sheet metal workers as well as sheet metal machinery engineers, who are constantly developing these machines for attaining the most efficient and labor-saving results.

Years of experience and scientific development are embodied in these machines and no expense has been spared to make them the best that it is possible to produce.

Many exclusive features which are not only practical but absolutely necessary are embodied in these brakes. The general construction and many other features are fully covered by patents.

Materials such as cast iron and wood have their logical uses but not in a bending brake. Modern engineering practice substantiates this fact. A brake is built to be subjected to heavy strain, and to be reliable, must always remain straight and true under all conditions. Our construction is an arrangement of heavy steel plates placed in such positions that the strain is directly against the edges of the various plates. This insures the greatest strength and accuracy. Other parts requiring strength are made of steel castings and drop forgings. The result is long life, freedom from repairs, and rapidity of operation with minimum power and effort.



Hand Bending Brake in Operation

Chicago Steel Hand Bending Brakes

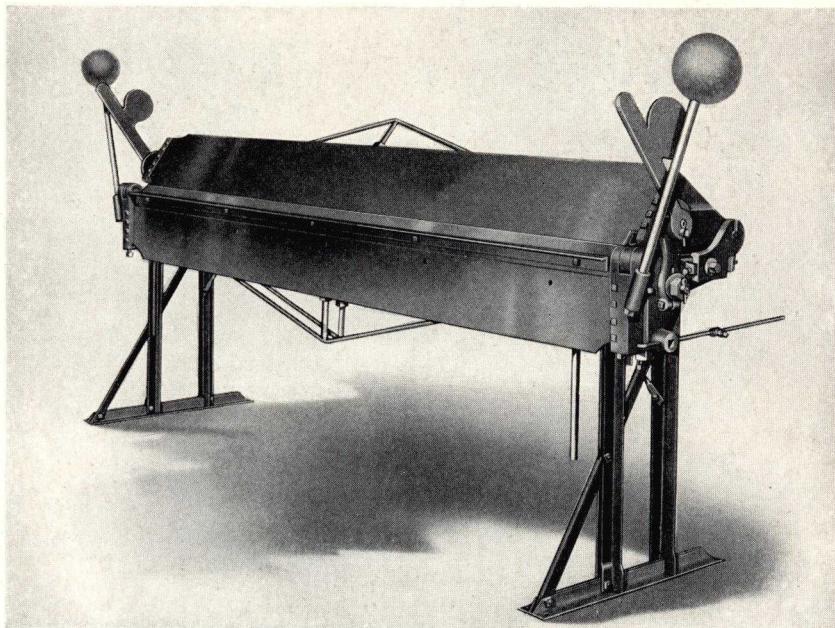
OUR line of hand bending brakes, or cornice brakes, as they were commonly called, ranges from three to twelve feet in length and to bend up to 12 gauge sheet metal.

Over twenty thousand hand brakes are in use in all parts of the world and rendering perfect satisfaction to their users.

These brakes embody such features as one man operation, light weight, quick action, wide opening of jaws, provision on ends for flanges and bending edge for forming as small as $\frac{1}{4}$ inch reverse bends.

The construction is such that although the machines are strong and rigid, they are light in weight. They can readily be disassembled in three main pieces, which facilitates transporting them. Steel is used throughout in their construction. Being three times the strength of cast iron, it affords a saving in weight and at the same time insures the greatest strength and endurance. Steel castings and drop forgings are used for hinges and other parts on which there is a strain. This eliminates the possibility of breakage in use or in transporting. This is essential to our foreign customers, as well as domestic users. They will stand continuous hard usage.

Our first machines, made twenty-five years ago, are still in use and with reasonable care they will perform efficient service for a lifetime.

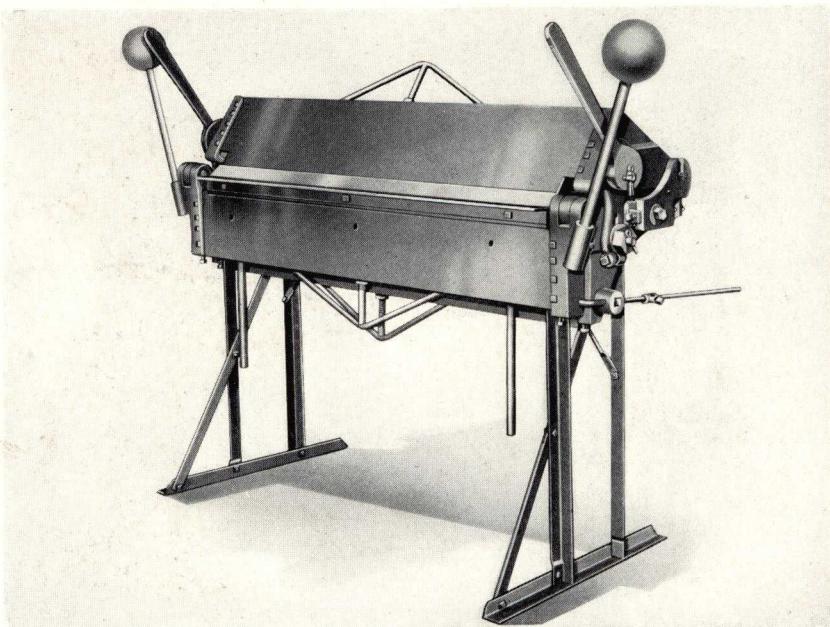


No. 4—Length, 8 Ft.; Capacity, 18 Gauge

Variety of Work These brakes are adapted for a large variety of work, such as cornice, gutter, square and octagon pipe, skylights, flashing, ridge roll, roofing, ventilating, furnace, auto radiator, fender and body, tanks, corrugated drain boards, etc. Also used by technical schools and colleges for instructing students.

Special Work We can modify our standard brakes to do various classes of special work as described on page 30.

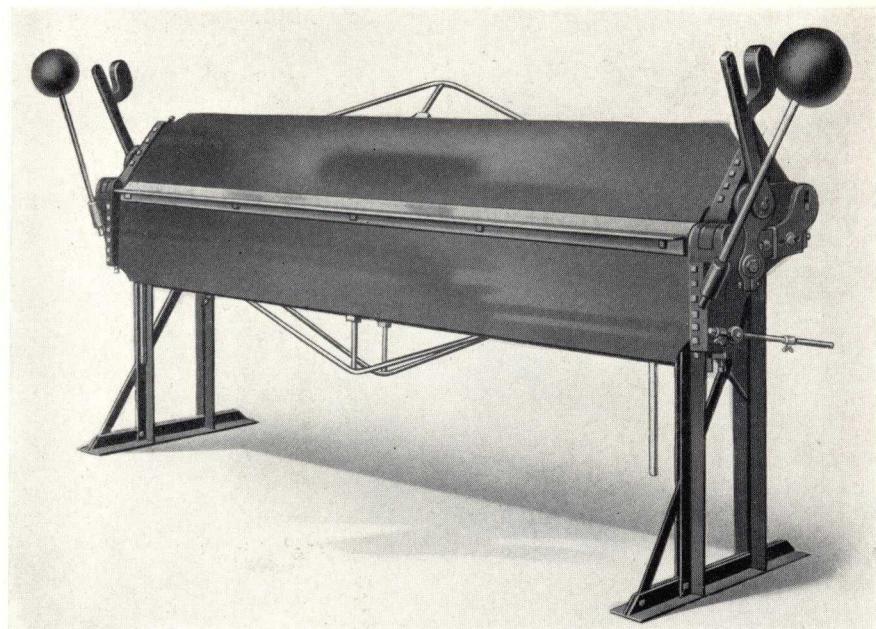
Capacities The rated capacity is for mild sheet steel and for bending a flange of one inch or wider on sheets of full capacity. Narrower flanges can be bent on lighter metal in proportion. Narrow flanges on heavy sheets, hard metals and special bending should be taken into consideration. Special attention is called to the fact that narrow flanges cannot be bent on full length sheets of rated capacity.



No. 6—Length, 4 Ft.; Capacity, 16 Gauge

Heavy Material To secure additional leverage for bending heavy metal, a steel angle extension is attached to the bending leaf. This is readily removed to allow for forming short reverse bends on light metal. See page 9.

One Man Feature Each end clamps independently on brakes over 4 feet long. Thus on short work only one end need be used, the other end remaining closed. Full length sheets can be worked by one man. One end can be clamped on the mark and the other end of the sheet can be moved to the desired mark without disturbing the first mark. With two men working, each clamps his end as he reaches his mark without waiting for the other, which insures accurate and quick operation. If so ordered eccentric levers can be connected so that both ends operate together, as on the old style brakes. This does not change our structural or mechanical

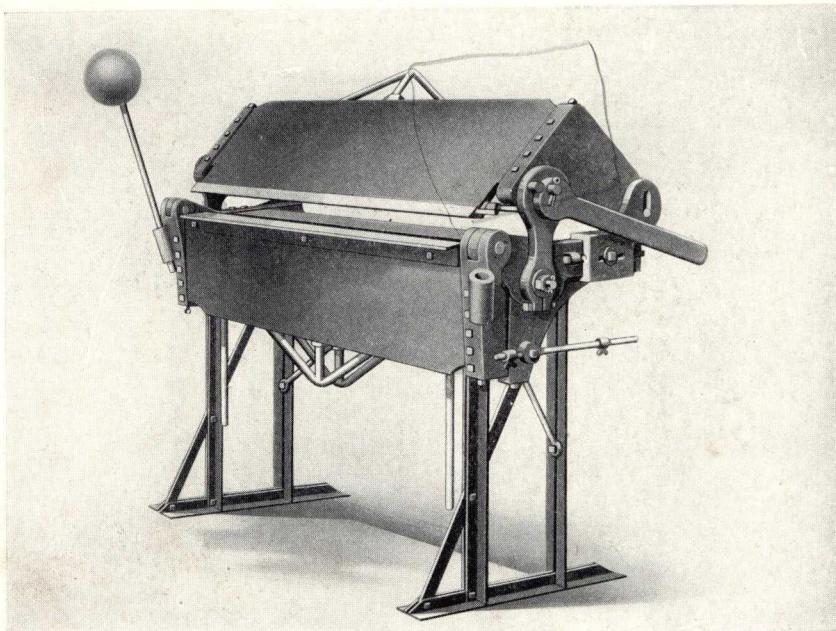


No. 3—Length, 8 Ft.; Capacity, 16 Gauge

features. Brakes three and four feet long are arranged so that the handles can be operated independent or together.

Clamping of Sheets The top and bottom jaws are connected by a link which contains an eccentric bushing in the lower part, providing quick and accurate adjustment of the clamping pressure. It is necessary that the sheet be clamped firm in order to make a perfect bend. When near dead center in clamping, enormous pressure is applied to the sheet. The weights on hand levers permit the jaws being opened to any point, thereby allowing full freedom in handling the material with both hands.

Perfect Balance The bending leaf is perfectly balanced by weights, which affords rapid and easy operation. This makes it practical for a jobbing shop to install the heavier type machines putting them in a position to do heavy work, the same machine being also efficient on light metal.

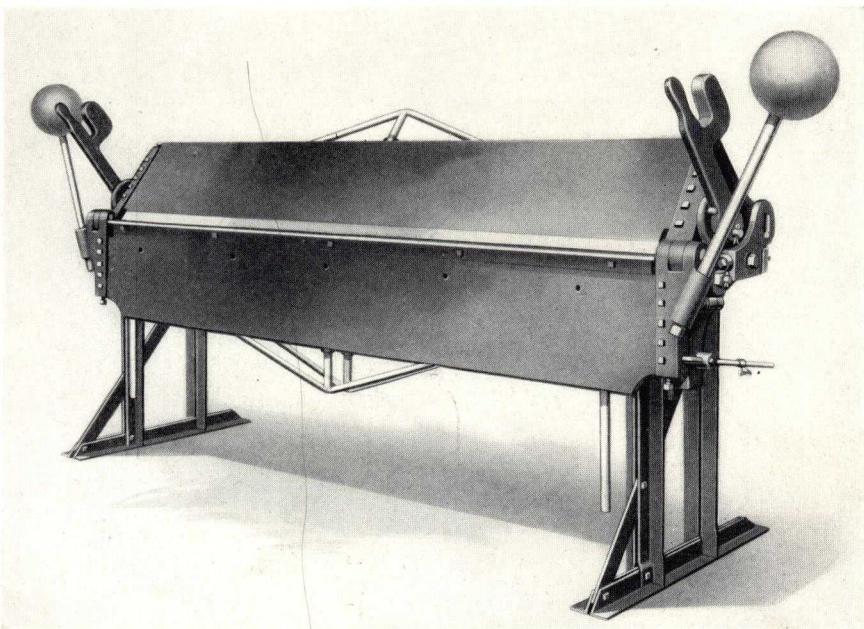


No. 5—Length, 4 Ft.; Capacity, 14 Gauge
Note wide opening of jaws

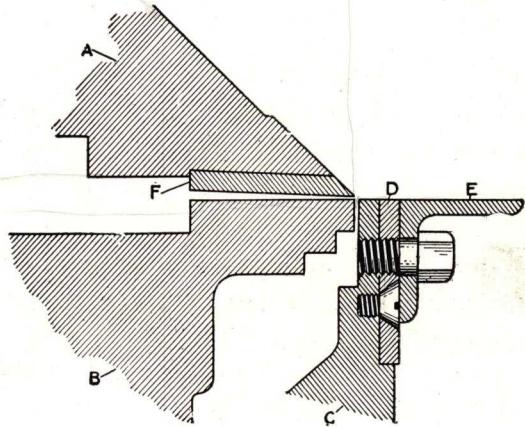
Openings for Flanges Ample provisions are made on both ends of the forming edges to allow for the bending of work on which a crosswise flange has been bent.

Wide Opening of Jaws The operation of the eccentric levers on each end allows the jaws to open quickly and wide. See illustration above. The advantage of the wide opening jaws is apparent in doing moulding work and for the insertion of bent sections.

Sharp and Rounding Bends Set screws provide adjustment of upper jaw forward and back for light or heavy material and sharp or rounding bends. When moved back greater space is allowed between edge of upper jaw and apron, which results in a rounding bend. This adjustment is quickly made.



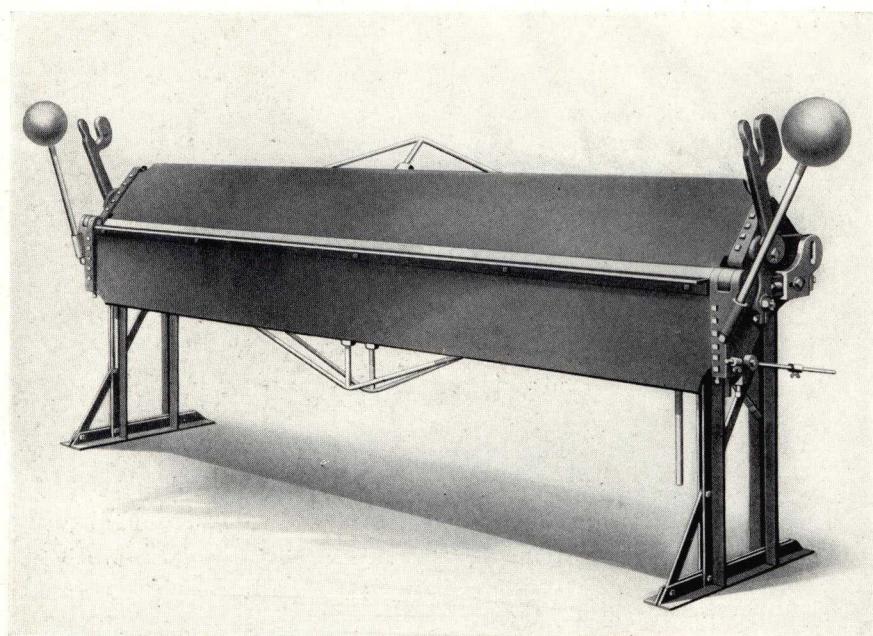
No. 2C—Length, 8 Ft.; Capacity, 14 Gauge



Special Steel Edges This cut shows cross section of bending edges. A upper jaw. B lower jaw. C apron or bending leaf. D detachable $\frac{1}{4}$ -inch bar. E detachable angle extension for heavy bending. F special steel edge.

Angle E and bar D are removable for making as close as $\frac{1}{4}$ -inch reverse bends on light metal.

F and D are made of special hard alloy steel to withstand wear. They will maintain extreme accuracy under many years of continued service. The logic of this provision is demonstrated on our brakes that have been in use for years.



No. 2A—Length 10 Ft.; Capacity, 20 Gauge

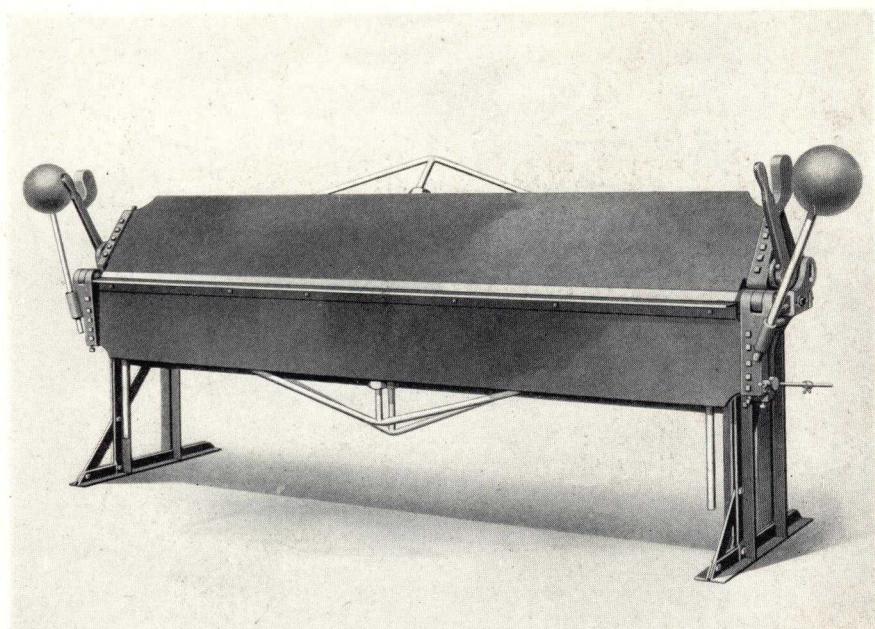
Stop Gauge Improved adjustable stop gauge is furnished which regulates the angle of the bend and moves entirely out of the way when the apron is lowered. It is quickly set to make a number of bends of the same angle.

Moulding Forms Five metal moulding forms of various sizes, suitable for making cornice, O G, ridge roll, etc., are supplied with each cornice brake.

Wrench Furnished to fit all adjustable parts.

Foot treadle attachment for clamping upper jaw can be supplied at extra cost.

Special gauges, attachments, or changes in construction of bending edges can be furnished and quotations will be made upon receipt of sketches or samples of work to be done.

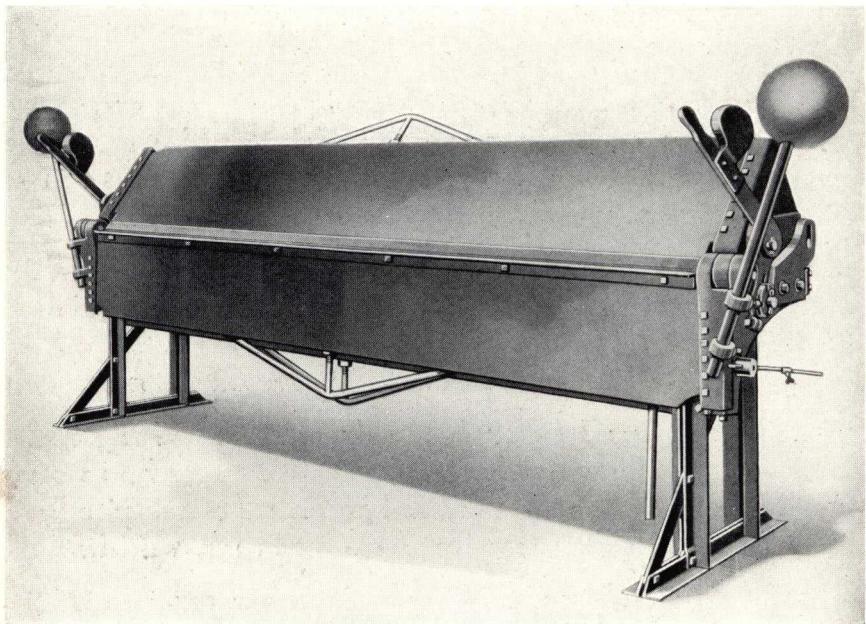


No. 2—Length, 10 Ft.; Capacity, 16 Gauge

Ten and twelve-foot sheets are easily worked on these machines on account of their construction. Their ease of operation allows long sheets to be formed with accuracy and minimum exertion. On account of independent operation of clamping levers, shorter length sheets can be formed equally as well as on a shorter machine.

Longer length brakes are coming rapidly in more demand since the development of these machines. The practicability of bending heavy sheets in long lengths by hand is only possible by our construction, and is accounted for by perfect balance of clamping jaw and bending leaf and rapid adjustment for light and heavy metal, and for sharp and rounding corners.

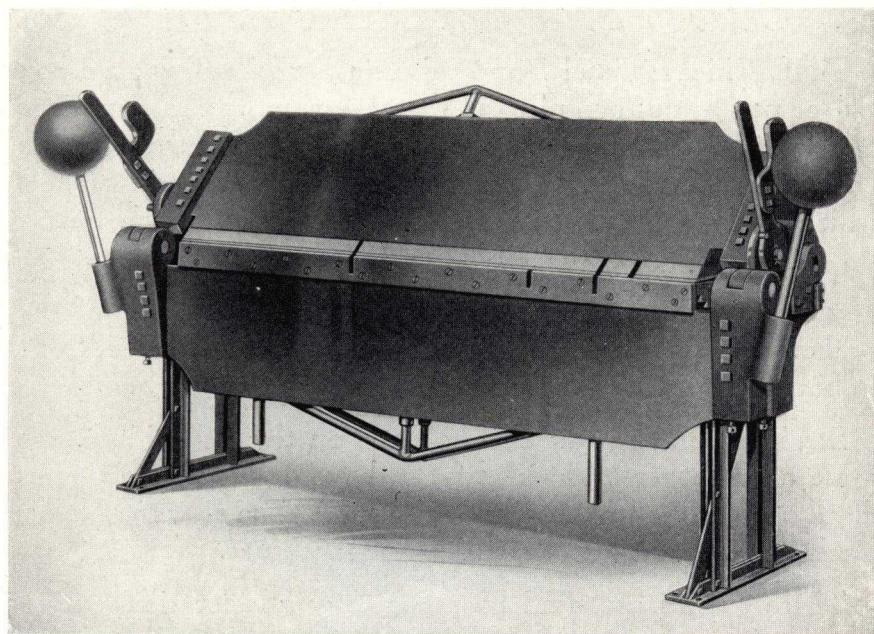
Narrower flanges can be bent on the heavier machines than on the lighter sizes as this requires considerably stronger machines than wider flanges, and on this work our heavy brakes are superb.



No. 1B—Length, 10 Ft.; Capacity, 14 Gauge

List of Chicago Steel Hand Bending Brakes

New Number	Old Number	Length	Capacity	Weight	Code Word
312		3 ft. 1/2 in.	12 gauge	900 lbs.	Orwol
314	5B	3 ft. 1/2 in.	14 gauge	700 lbs.	Ousel
316	6B	3 ft. 1/2 in.	16 gauge	500 lbs.	Oxali
412		4 ft. 1/2 in.	12 gauge	1050 lbs.	Oclar
414	5	4 ft. 1/2 in.	14 gauge	850 lbs.	Otios
416	6	4 ft. 1/2 in.	16 gauge	650 lbs.	Owlet
512		5 ft. 1 in.	12 gauge	1250 lbs.	Obliv
514		5 ft. 1 in.	14 gauge	1100 lbs.	Owmin
516		5 ft. 1 in.	16 gauge	980 lbs.	Owtil
518	4C	5 ft. 1 in.	18 gauge	850 lbs.	Osmun
612		6 ft. 1 in.	12 gauge	2300 lbs.	Olwit
614	17	6 ft. 1 in.	14 gauge	1550 lbs.	Ognin
616	3B	6 ft. 1 in.	16 gauge	1200 lbs.	Onage
618	4B	6 ft. 1 in.	18 gauge	950 lbs.	Orchi
812		8 ft. 1 in.	12 gauge	2700 lbs.	Owlar
814	2C	8 ft. 1 in.	14 gauge	2000 lbs.	Oloic
816	3	8 ft. 1 in.	16 gauge	1500 lbs.	Omega
818	4	8 ft. 1 in.	18 gauge	1090 lbs.	Omaro
1014	1B	10 ft. 1 in.	14 gauge	3000 lbs.	Obelu
1016	2	10 ft. 1 in.	16 gauge	2500 lbs.	Ochre
1018	2B	10 ft. 1 in.	18 gauge	2100 lbs.	Ogive
1020	2A	10 ft. 1 in.	20 gauge	1800 lbs.	Okapi
1218	1	12 ft. 1 in.	18 gauge	4000 lbs.	Oakum
1222		12 ft. 1 in.	22 gauge	3000 lbs.	Oasis



Slotted Brake

The Chicago Steel Slotted Brakes

SLOTS can be cut in brakes to accommodate work having flanges on four sides of a sheet. These slots may be in the top jaw, lower jaw or bending leaf, or any combination of these members. Slots are cut to suit the particular requirements of the work to be done.

Any size of either hand or power brakes can be slotted.

We will quote on slotted brakes upon receipt of full particulars regarding the requirements. We must know the width, depth and location and spacing of slots and in what sections of the brake required. We can also quote from samples or blue prints of work. Customers can also cut slots to suit their work after brake is received.

For bending a portion of a sheet and leaving part of the sheet unbent a sectional bending leaf can be furnished.

Chicago Steel Box and Pan Brake

THE Chicago Steel Box and Pan Brake will form a box or pan out of one piece of metal, including the four sides and bottom. Provisions are also made for a narrow flange on the top of a box, which can be turned either in or out, which is done in the manufacture of electric switch boxes.

The fingers are adjustable and removable, which permits any size box or pan to be formed within the capacity of the brake. After both sides of a box are formed, these sides fit in between the fingers adjusted to the width of the box.

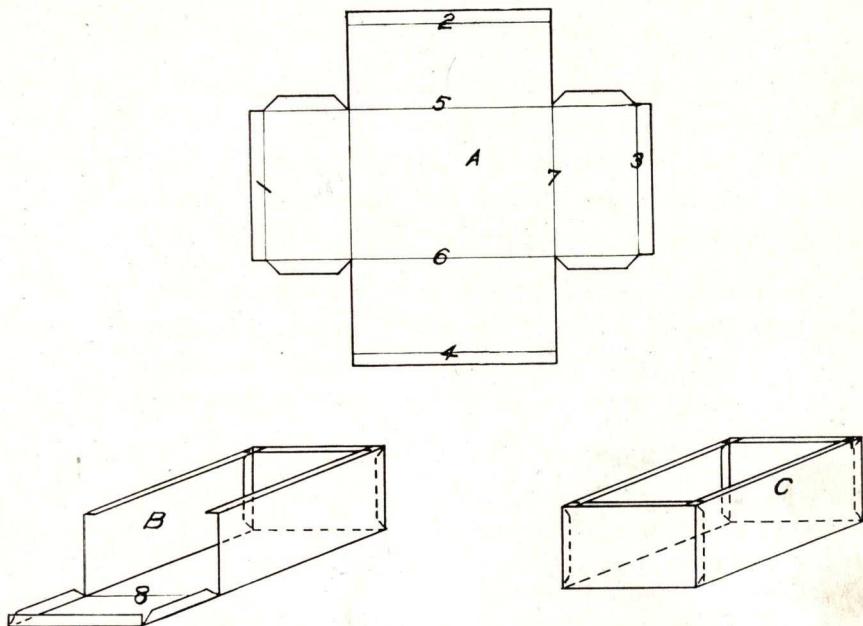
Straight bending can also be done on these machines, the same as on other brakes; in fact, they combine the features of all other style brakes and at the same time are suitable for work which cannot be done on other machines.

These brakes are used by practically all electrical manufacturers for forming electric switch boxes, cut-out boxes, and panel board cabinets. They are also used extensively in the manufacture of conveyor buckets, tote boxes, in fact all classes of box and pan work, as well as a large variety of other work.

The fingers are made of steel, insuring them against breakage. Set screws on these fingers provide instant adjustment, and they are readily adjusted or removed to provide for work of different sizes. Fingers of various widths are furnished, so that combinations of any size can be obtained. Regular sizes are listed with fingers of six, eight, and twelve inch depth which indicates the maximum depth of box that can be formed. Special sizes can be made for different requirements.

Being made of steel permits light weight fingers of unlimited strength, and the adjustment is easy and quick. The result is rapidity of operation which makes for quantity production.

The labor-saving qualities of these machines are apparent and the large demand for them has proved their efficiency for quantity production as well as for variety of work.



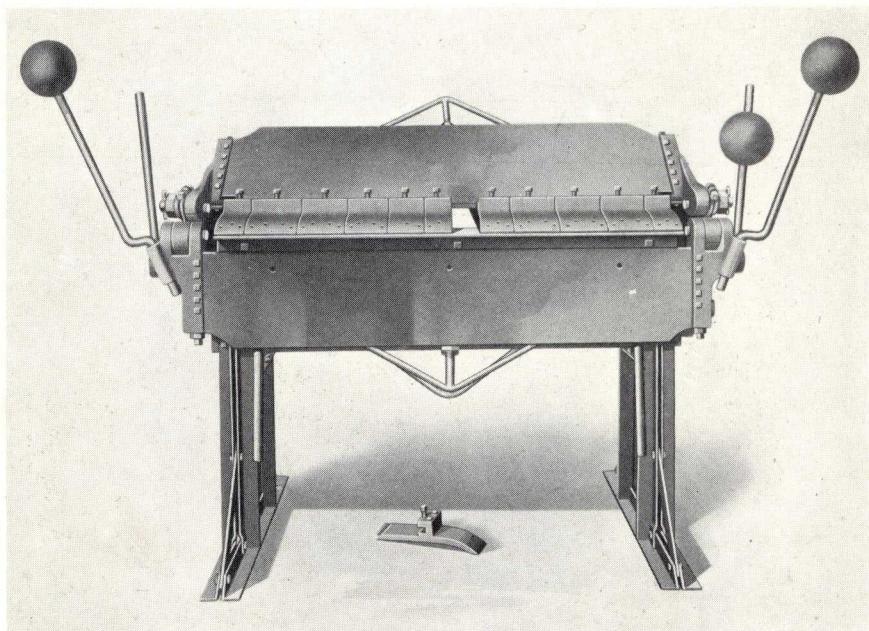
Sketches above illustrate a steel box formed in one piece on a Chicago Steel Box and Pan Brake.

Figure A represents the layout of the sheet before being formed. Bends are first made on lines 1-2-3 and 4. These bends form a small flange on top of box which is sometimes used for attaching hinges for cover. Illustration shows these flanges turned in, but they can be turned either out or in.

Bends are then made on lines 5 and 6 which form the sides of the box. This operation also bends the ears or riveting flanges.

The brake fingers are then adjusted to the width of the box and the sheet is bent on line 7. In making this operation the sides of the box pass between the fingers, and figure B shows box after this bend is made.

The box is then reversed and bent on line 8. The sides again pass between the fingers and the box is completely formed as shown in figure C.



Hand Box and Pan Brake

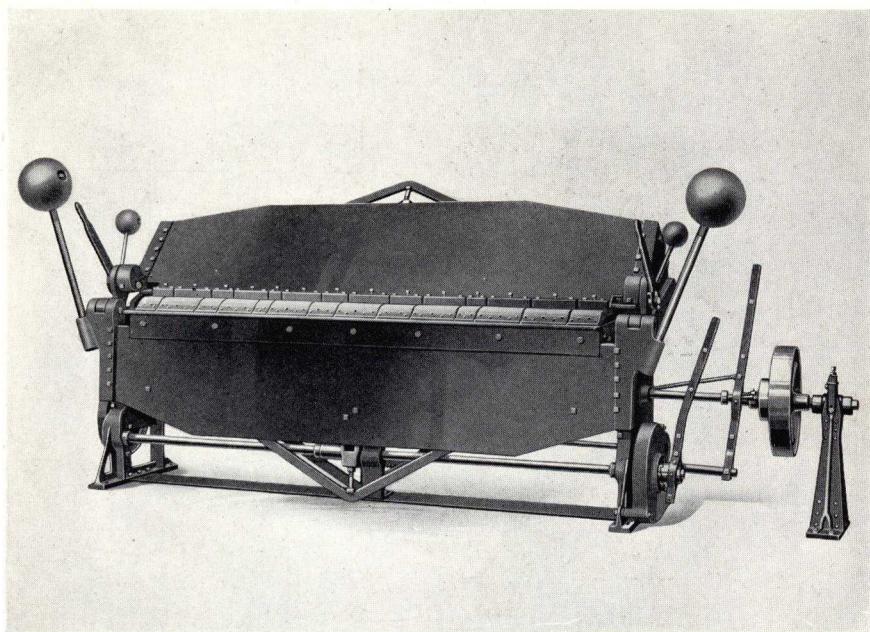
ABOVE illustration shows how the fingers on these machines may be shifted or entirely removed as the particular circumstances may require.

The eccentrics on the hand brakes operate together by which means the top jaw can be raised or lowered from either end.

Regular standard sizes are listed below. This type of machine can also be furnished in other lengths and capacities and the construction can be modified for special requirements.

List of Box and Pan Brakes—Hand Operated

Length	Finger Extension	Capacity	Weight	Code Word
No. 30—3 ft.	6 in.	14 gauge	850 lbs.	Wacke
No. 31—4 ft.	6 in.	14 gauge	1,300 lbs.	Walor
No. 32—5 ft.	6 in.	14 gauge	1,800 lbs.	Warel
No. 33—3 ft.	8 in.	14 gauge	950 lbs.	Westr
No. 34—4 ft.	8 in.	14 gauge	1,600 lbs.	Welki
No. 35—5 ft.	8 in.	14 gauge	2,000 lbs.	Wewol
No. 36—6 ft.	6 in.	16 gauge	2,000 lbs.	Wlorc
No. 37—8 ft.	6 in.	16 gauge	2,600 lbs.	Wlacl
No. 38—10 ft.	6 in.	18 gauge	3,000 lbs.	Wlnir
No. 39—6 ft.	8 in.	16 gauge	2,400 lbs.	Wlamw
No. 40—8 ft.	8 in.	18 gauge	3,000 lbs.	Wlsol



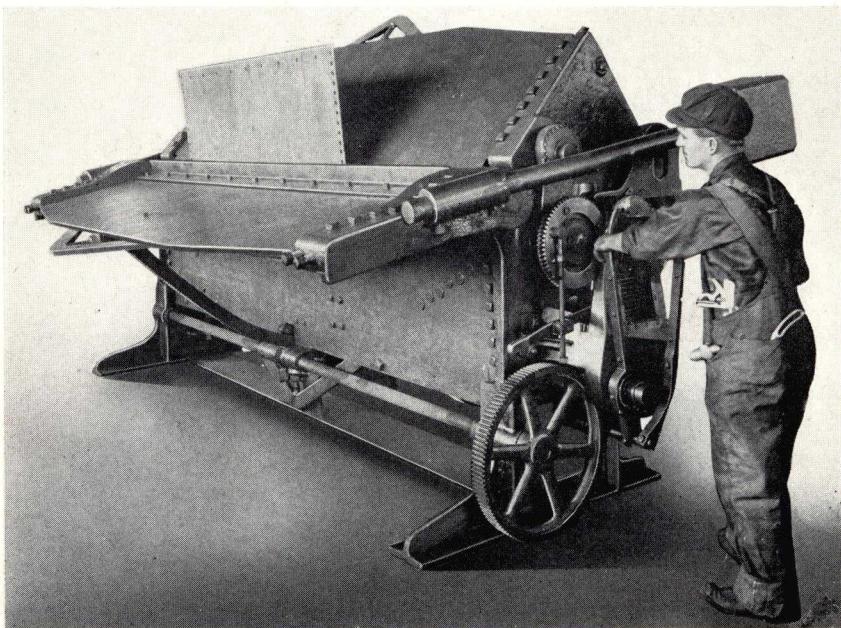
Power-driven Box and Pan Brake

THESE machines are designed for the forming of the heavier metals into boxes and pans. Straight bending can be done as well as box work.

They can be furnished to operate either by hand gearing, belt drive, or direct motor drive. Regular sizes are built for 10 gauge, but they can be furnished to bend up to $\frac{3}{8}$ inch plate.

List of Box and Pan Brakes—Power Operated

Length	Finger Extension	Capacity	Code Word
No. 60—4 ft.	6 in.	10 gauge	Wicko
No. 61—5 ft.	6 in.	10 gauge	Wigan
No. 62—6 ft.	6 in.	10 gauge	Wilet
No. 63—8 ft.	6 in.	10 gauge	Wizar
No. 65—4 ft.	8 in.	10 gauge	Woado
No. 66—5 ft.	8 in.	10 gauge	Womba
No. 67—6 ft.	8 in.	10 gauge	Worel
No. 68—8 ft.	8 in.	10 gauge	Wowlo
No. 70—4 ft.	12 in.	10 gauge	Wrait
No. 71—5 ft.	12 in.	10 gauge	Wrido
No. 72—6 ft.	12 in.	10 gauge	Wrola
No. 73—8 ft.	12 in.	10 gauge	Wryne



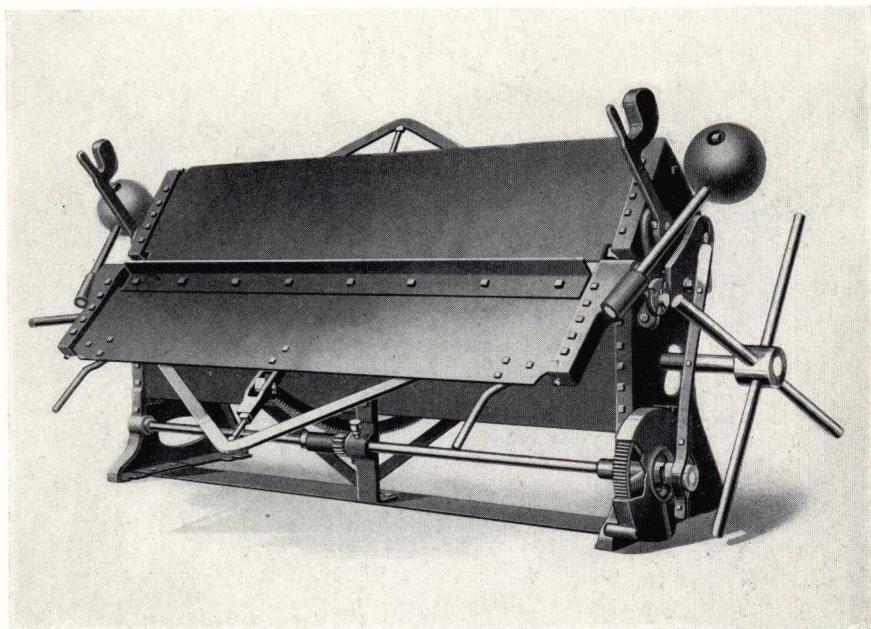
No. 206—Length, 10 Ft.; Capacity, $\frac{1}{4}$ In.

Showing Brake in Operation Bending Plate at Right Angle

Chicago Steel Power Bending Brakes

THE development of our line of brakes has always been in keeping with the demand for the most efficient machinery to care for the increasing use of formed sheets and plates. They represent the most practical and highly developed design and are made in more sizes than all other makes combined. They are also made in longer lengths and for heavier bending.

Cold bending of heavy plates without fracturing the material is best accomplished on our brakes. The variety of bending which can be done is practically unlimited and special attention is called to the fact that dies are not required for different angles or sharp or rounding corners. Bends of extra large radius can also be made by the application of rounding nose on upper jaw. Other important features are that narrow reverse bends can be formed, and that openings are provided



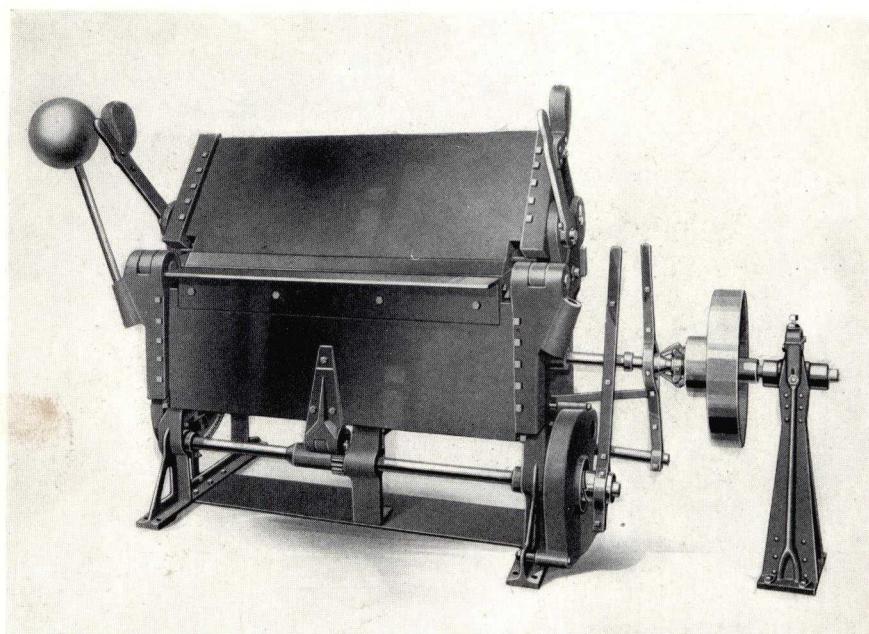
No. 184—Length, 8 Ft.; Capacity, 10 Gauge, Hand Geared

on each end to accommodate already bent crosswise flanges either up or down. Slots can also be cut to accommodate work where the four sides of a sheet are flanged. See illustration on page 13.

The bending leaf is actuated by curved steel racks, which deliver the pressure at the center of the machine. This is only possible on account of the pivoted joint on the bending leaf which permits the bending leaf to raise considerable beyond a right angle bend, and returns the rack below the bed level in the rear, so that any length sheets or plates are free to pass through the machine.

Power brakes are furnished in various drives, including hand gearing, belt drive, and direct connected motor.

Hand Geared is practical on only the lighter sizes and where power is not accessible. The ratio of gearing is such that full length sheets can be bent up to the capacity of

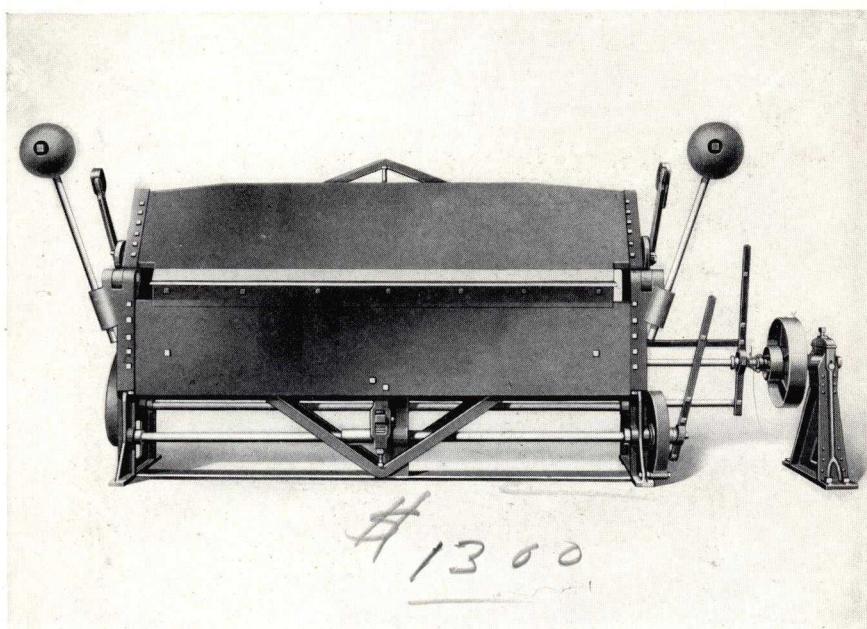


No. 146—Length, 4 Ft.; Capacity, $\frac{1}{4}$ In.

the machine. The bending leaf can be detached from the steel rack by removing the pin connecting same. This part being perfectly balanced, light sheets can be bent as with the regular hand brake.

The hand gearing arrangement is illustrated on page 19.

Belt Drive The belt-driven machines are equipped with pulleys containing friction clutches. The lighter size machines have single belts. An adjustable dog on the rack trips off friction clutch when bending leaf has reached the desired angle. The apron is slightly underbalanced by the weights, so that when the clutch is released it comes down of its own weight, being controlled by a friction brake attached to the clutch lever. By moving lever in opposite direction of engaging the positive clutch this brake is applied. The larger sizes of belt-driven brakes are equipped with forward

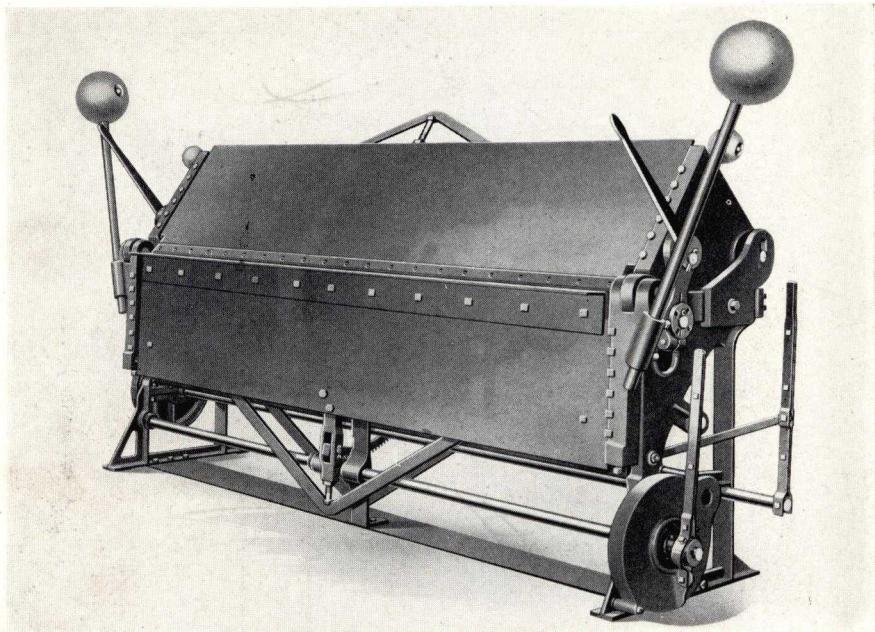


No. 185—Length, 8 Ft.; Capacity, $\frac{3}{16}$ In.

and reverse pulleys. When the apron is lowered to the extreme point, the clutch disengages automatically.

Direct Motor Drive The illustration on page 27 shows how motor is attached to brake. The motor is mounted well under the bottom of the brake and out of the way, making the machine completely self contained. The driving arrangement is by means of a rawhide pinion on the motor. This pinion engages in a gear on the rear shaft to which are attached friction clutches.

On the smaller sizes, the bending leaf returns by its own weight, the same as described under single pulley belt machines. On the larger sizes, direct and reverse friction clutches regulate the raising and lowering of the bending leaf through the direct and reverse gearing, the clutch automatically disengaging itself when the bending leaf reaches the extreme lower point.



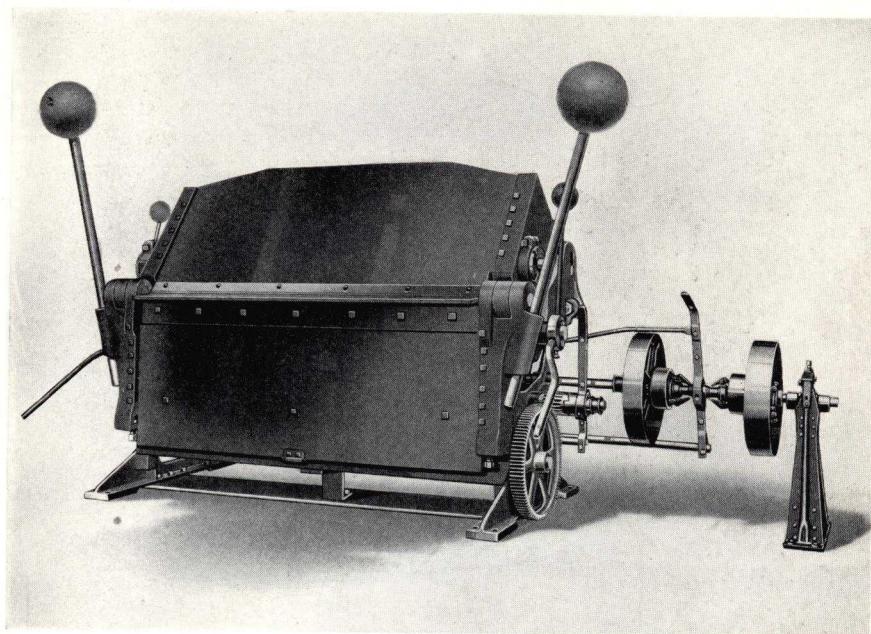
No. 204—Length, 10 Ft.; Capacity, 10 Gauge

Body of Power Brakes Made of high carbon steel plates of special analysis to insure great strength and rigidity.

The Housings and other principal parts of these brakes are cast and forged steel. All gears are machine cut, those under strain being made of steel. Gear guards are provided for the protection of working men.

Bearings are of ample size to insure long life, being lined with high-grade babbitt. Prosphor bronze is used on parts under excessive strain. The shafting is ground and polished, high carbon shafts are used on the heavier sizes.

The Adjustment for various thicknesses of material on the lighter machines is obtained by an eccentric bushing within the connecting link. Brakes with power clamp do not require this adjustment. Set and draw screws provide for the movement of the upper jaw forward and backward for



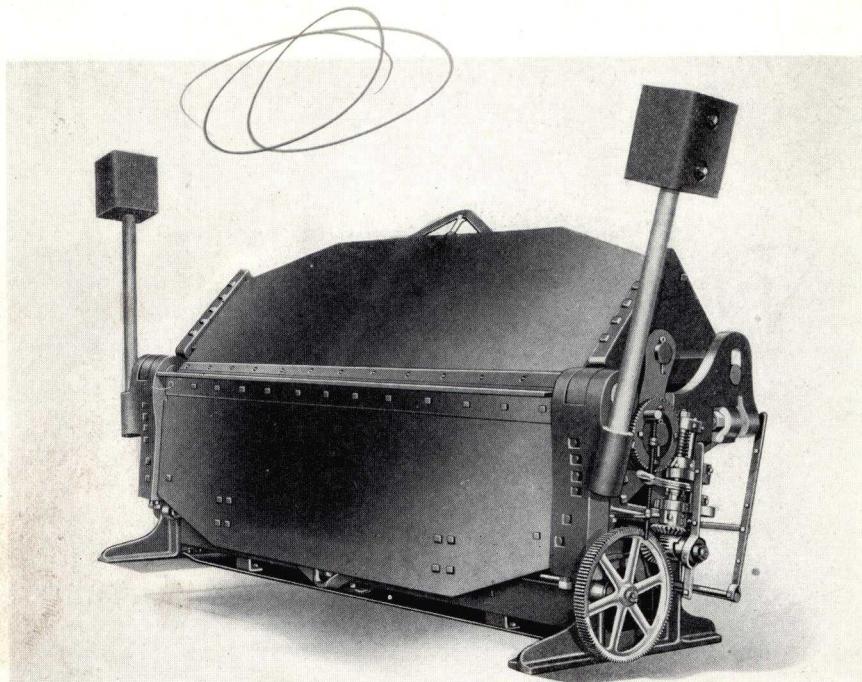
No. 186—Length, 8 Ft.; Capacity, $\frac{1}{4}$ In.

sharp and rounding bends. Angle extension on bending leaf is detachable to allow for making narrow reverse bends.

Power Clamp This is an exclusive feature on the Chicago Steel Power Brakes. In the bending of heavy plates, it is essential that the buckles be flattened before the plate is bent, to insure a uniform bend.

Brakes numbers 187, 206, 225, and larger are equipped with our patented power clamping device which raises and lowers the upper jaw. This eliminates hand levers and exertion in clamping material in brake and has *sufficient power to flatten buckled plates*. This requires no adjustment for plates of different thicknesses as it locks at any point.

It is operated by bevel gears from the main shaft through semi-friction clutches, which disengage automatically when sufficient pressure is applied to material to be bent. Steel worms mesh with manganese bronze worm gears, which form part of eccentrics that actuate the upper jaw.



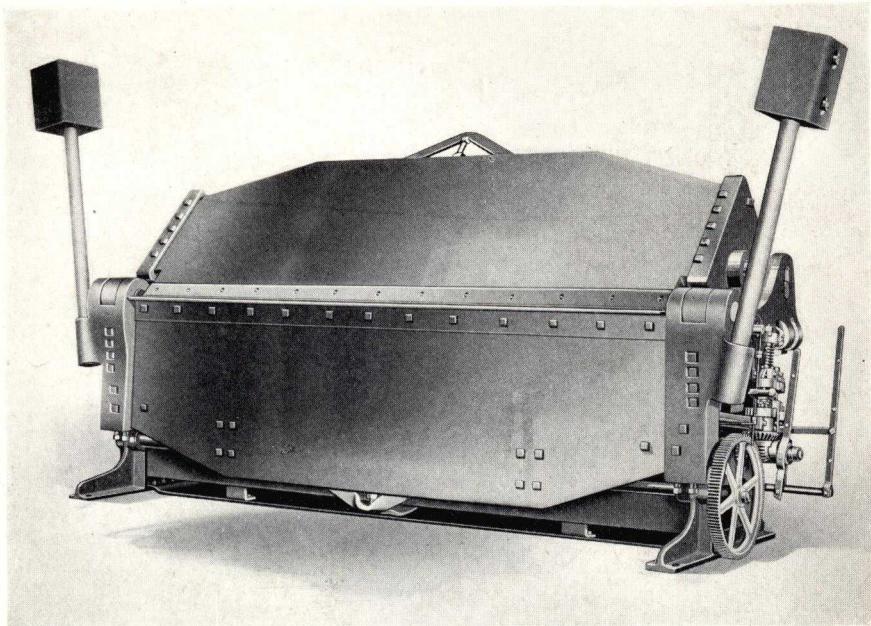
No. 227—Length, 12 Ft.; Capacity, $\frac{3}{8}$ In.

These machines are suitable for a large variety of heavy work. The adaptability of our brakes to bending material of different thicknesses, of any length within their capacity, and to the ease with which various angles can be bent is an outstanding feature.

Users of these machines include many of the largest concerns in all parts of the world.

They are in general use by the leading railroads and car builders and are indispensable equipment in all U. S. Navy Yards and practically all the leading shipyards, as well as tank shops, etc., engaged in work for shipbuilding.

They are rapidly becoming a regular part of boiler shop equipment. For such work as mine cars and metal dump bodies, they are unequalled.



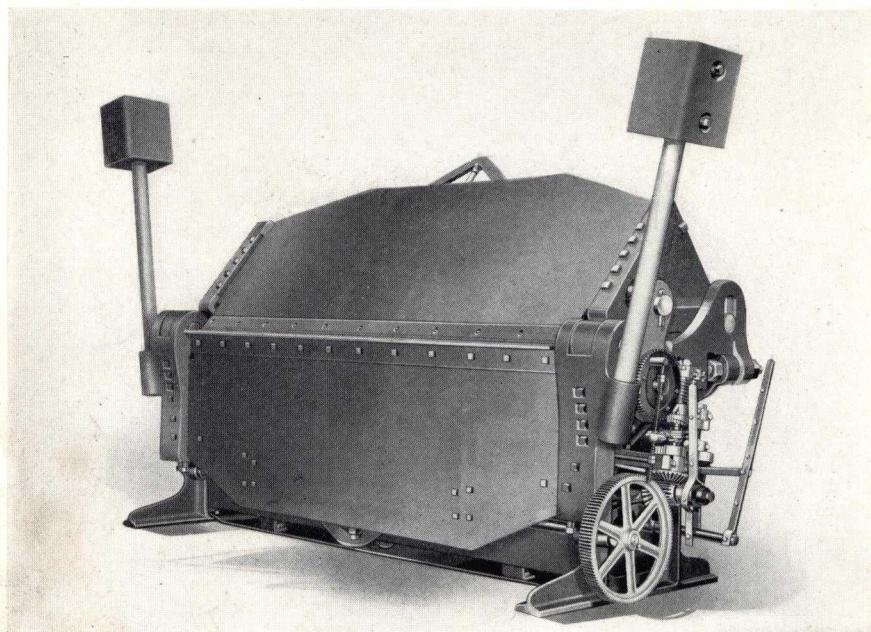
No. 266—Length, 16 Ft.; Capacity, $\frac{1}{4}$ In.

By the application of a rounding nose, complete round-cornered dump bodies or cars are made.

Structural shops find them indispensable in their equipment for forming various shapes, which enable them to eliminate angle bars in many cases. They also find them to be the best method of bending large quantities of small pieces which formerly required heating or individual bull dozer operations. This class of bending is done by filling the entire brake with short sections and making one operation of the bending leaf which completes the entire lot.

The most progressive makers of metal stair treads and risers are producing them on these machines.

The great packing firms and harvester manufacturers are using them extensively for various work in their plants in all parts of the world.



No. 208—Length, 10 Ft.; Capacity, $\frac{1}{2}$ In.

Producers of steel piling and manufacturers of concrete mixers are forming their various shapes on these machines.

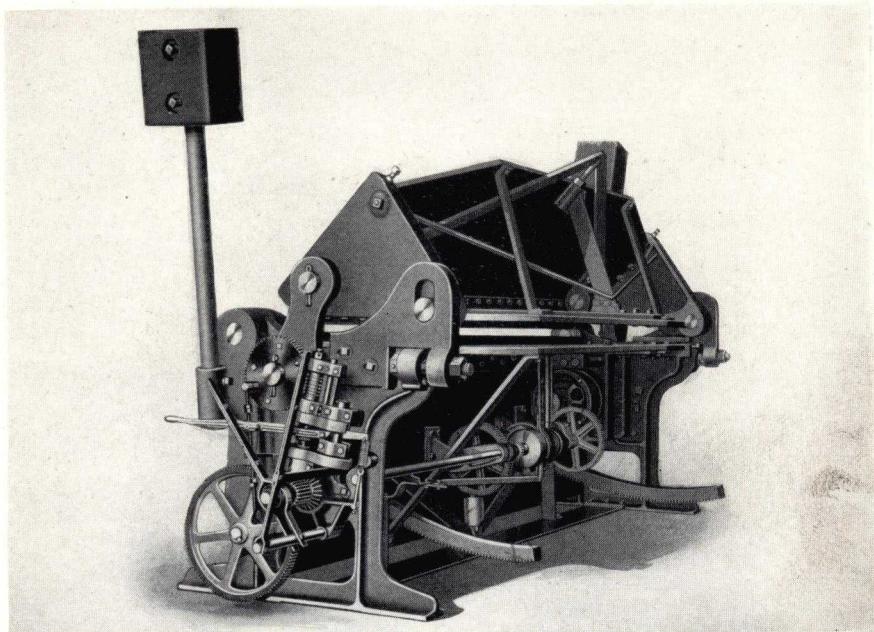
The leading automobile manufacturers are large users of them; as are also many of the tractor makers.

Most of the metallic grave vaults produced are made on our brakes.

Innumerable other lines of business are represented in our list of thousands of users.

Sheet metal shops find them money-makers for heavy work which they could not otherwise handle.

A few of more than twenty-two thousand users of our brakes are listed on page 31. Attention is called to the fact that this list, although very incomplete, contains the names of the representative firms of the country and covers many varied lines of business.



No. 226—Length, 12 Ft.; Capacity, $\frac{1}{4}$ In.

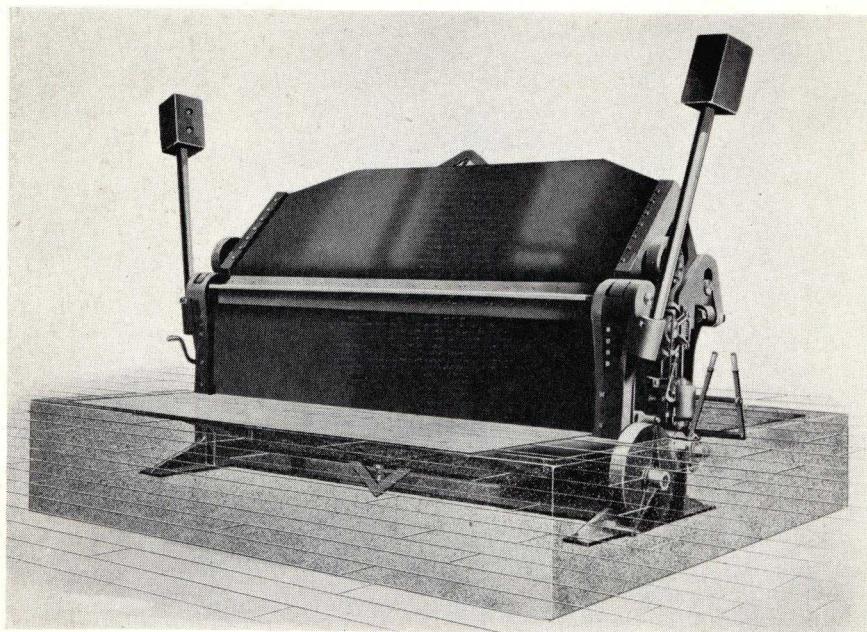
The above illustration is the rear view of our heavy motor-driven brake with power clamp.

The motor is mounted under the machine on the right-hand side of picture.

Attention is called to the steel racks extending backward on the lower part. These racks do not interfere in any way with the bed of the machine which allows sheets to pass clear through. At the same time, these racks raise the bending leaf considerable over a right angle bend.

It will be noted that the top jaw on this brake is open. The wide opening is apparent as is also the feature of the material being free to pass through from front to back without interference.

This view together with those on preceding pages shows our patented power clamp in detail.



No. 268—Length, 16 Ft.; Capacity, $\frac{1}{2}$ In.

The above illustration represents the heaviest and longest bending brake built. This type is built in capacities to bend up to $\frac{3}{4}$ -inch plate.

The recent application of machines of this capacity eliminates the necessity of heating heavy plates to be bent and consequently reduces the cost of such bending. The cost of operation is only a fraction of that of hydraulic presses for doing similar work.

Brakes of this size are set in a pit so as to make it convenient for the handling of the material in and out of the brake.

The platform shown is attached to the bending leaf and moves with same.

Chicago Steel Power Brakes

LIST OF SIZES

No.	Bending Length	Maximum Capacity	†Minimum Flange	‡H. P. Motor	Approximate Weight	Code Word
133	3 ft. $\frac{1}{2}$ in.	12 gauge	1 inch	2	1400 lbs.	Radan
134	3 ft. $\frac{1}{2}$ in.	10 gauge	1 inch	2	1500 lbs.	Rabet
135	3 ft. $\frac{1}{2}$ in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	2	2100 lbs.	Rawon
136	3 ft. $\frac{1}{2}$ in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	3	3200 lbs.	Racem
137	3 ft. $\frac{1}{2}$ in.	$\frac{3}{8}$ inch	2 inch	5	4300 lbs.	Racor
138	3 ft. $\frac{1}{2}$ in.	$\frac{1}{2}$ inch	3 inch	5	5900 lbs.	Racil
143	4 ft. $\frac{1}{2}$ in.	12 gauge	1 inch	2	1500 lbs.	Radix
144	4 ft. $\frac{1}{2}$ in.	10 gauge	1 inch	2	2250 lbs.	Rafor
145	4 ft. $\frac{1}{2}$ in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	3	3200 lbs.	Ragen
146	4 ft. $\frac{1}{2}$ in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	5	3850 lbs.	Ragou
147	4 ft. $\frac{1}{2}$ in.	$\frac{3}{8}$ inch	2 inch	5	5750 lbs.	Railo
148	4 ft. $\frac{1}{2}$ in.	$\frac{1}{2}$ inch	3 inch	7 $\frac{1}{2}$	6600 lbs.	Rajpu
162	6 ft. 1 in.	14 gauge	1 inch	2	1850 lbs.	Ramol
163	6 ft. 1 in.	12 gauge	1 inch	2	2400 lbs.	Ramie
164	6 ft. 1 in.	10 gauge	1 inch	3	3700 lbs.	Ramou
165	6 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	3	4600 lbs.	Ranch
166	6 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	5	7200 lbs.	Range
167	6 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	7 $\frac{1}{2}$	8800 lbs.	Rankl
168	6 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	7 $\frac{1}{2}$	11200 lbs.	Rante
181	8 ft. 1 in.	16 gauge	1 inch	2	2100 lbs.	Reaw
182	8 ft. 1 in.	14 gauge	1 inch	2	2350 lbs.	Rebos
183	8 ft. 1 in.	12 gauge	1 inch	3	3800 lbs.	Recol
184	8 ft. 1 in.	10 gauge	1 inch	3	5200 lbs.	Redow
185	8 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	5	6000 lbs.	Reful
186	8 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	5	9800 lbs.	Regen
*187	8 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	7 $\frac{1}{2}$	13500 lbs.	Relai
*188	8 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	10	16000 lbs.	Reror
*189	8 ft. 1 in.	$\frac{3}{4}$ inch	4 inch	20	24000 lbs.	Rerwo
201	10 ft. 1 in.	16 gauge	1 inch	2	2750 lbs.	Ricol
202	10 ft. 1 in.	14 gauge	1 inch	2	3750 lbs.	Ridea
203	10 ft. 1 in.	12 gauge	1 inch	3	5650 lbs.	Rigmo
204	10 ft. 1 in.	10 gauge	1 inch	5	7000 lbs.	Riotl
205	10 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	5	11200 lbs.	Ripos
*206	10 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	7 $\frac{1}{2}$	16000 lbs.	Ritor
*207	10 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	10	20000 lbs.	Riwol
*208	10 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	15	24500 lbs.	Rilos
*209	10 ft. 1 in.	$\frac{3}{4}$ inch	4 inch	25	32000 lbs.	
221	12 ft. 1 in.	16 gauge	1 inch	3	5800 lbs.	Roadl
222	12 ft. 1 in.	14 gauge	1 inch	3	7400 lbs.	Robow
223	12 ft. 1 in.	12 gauge	1 inch	5	12000 lbs.	Rococ
224	12 ft. 1 in.	10 gauge	1 inch	5	15000 lbs.	Rodeo
*225	12 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	7 $\frac{1}{2}$	17650 lbs.	Rolax
*226	12 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	10	20700 lbs.	Ronde
*227	12 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	15	26000 lbs.	Rorol
*228	12 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	20	35000 lbs.	Rowan
*229	12 ft. 1 in.	$\frac{3}{4}$ inch	4 inch	30	60000 lbs.	Rowow
241	14 ft. 1 in.	16 gauge	1 inch	3	7500 lbs.	Rubiw
242	14 ft. 1 in.	14 gauge	1 inch	5	11250 lbs.	Ruchl
243	14 ft. 1 in.	12 gauge	1 inch	5	14400 lbs.	Rudon
*244	14 ft. 1 in.	10 gauge	1 inch	7 $\frac{1}{2}$	16800 lbs.	Rugos
*245	14 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	10	21000 lbs.	Rulaw
*246	14 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	15	24500 lbs.	Rumor
*247	14 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	20	35000 lbs.	Runic
*248	14 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	30	49000 lbs.	Runel
261	16 ft. 1 in.	16 gauge	1 inch	5	10000 lbs.	Rupee
262	16 ft. 1 in.	14 gauge	1 inch	5	14000 lbs.	Rurow
263	16 ft. 1 in.	12 gauge	1 inch	7 $\frac{1}{2}$	17000 lbs.	Rural
*264	16 ft. 1 in.	10 gauge	1 inch	10	21000 lbs.	Rusti
*265	16 ft. 1 in.	$\frac{3}{16}$ inch	1 $\frac{1}{4}$ inch	15	24500 lbs.	Rusto
*266	16 ft. 1 in.	$\frac{1}{4}$ inch	1 $\frac{1}{2}$ inch	20	30000 lbs.	Rutaw
*267	16 ft. 1 in.	$\frac{3}{8}$ inch	2 inch	30	50000 lbs.	Rutil
*268	16 ft. 1 in.	$\frac{1}{2}$ inch	3 inch	30	65000 lbs.	Rutis

†Minimum flange indicates the narrowest flange which brake is rated to bend on material of full length and thickness. Narrower flanges can be bent on lighter metal or shorter lengths.

*Sizes equipped with power clamp.

‡Speed of all motors should be approximately 1200 R. P. M.

All sizes can be arranged for either belt or direct motor drive and the lighter sizes can also be furnished with hand gearing.

Special Brakes

THE machines described in this catalog can be reconstructed or modified to meet the requirements of practically any class of bending.

We have in our organization engineers and practical sheet metal workers with years of experience in bending and forming problems and we have constructed brakes which perform many difficult and seemingly impossible bending operations.

We ask that our prospective customers submit us sketches or samples of their special work of either light sheet iron or heavy plates.

Among the special brakes we frequently make are those for soda fountain work, making the entire drain board of one sheet, which eliminates joints.

A slight modification of the regular hand brakes for metal weather strips greatly facilitates the production of this work.

We have constructed machines for making round beads on various thicknesses of metal and different diameters.

Sectional aprons are often furnished for bending a portion of a sheet while the remaining portion remains straight. This is frequent in the construction of soda fountains, concrete mixers, auto radiator shells, and bending where the flanges run irregular.

Special dies can be attached to either the upper jaw or bending leaf to meet the requirements of certain work.

Top jaws can be furnished specially beveled to allow the bending of greater angles than ordinarily required.

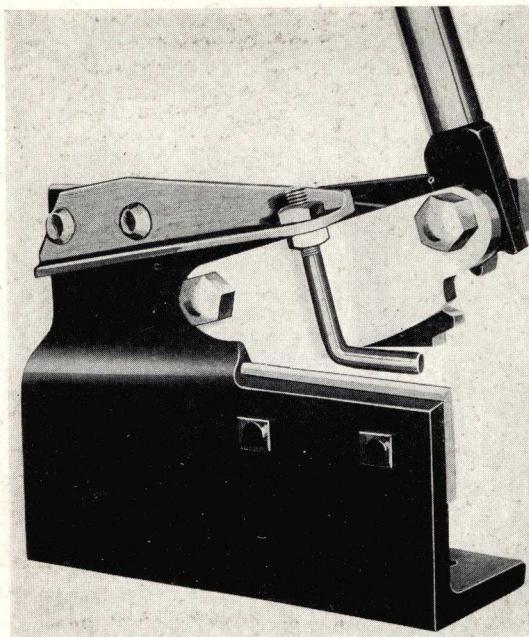
Double eccentrics can be applied to increase the raise of the upper jaw where the work is so formed that sections larger than normal must pass through the brake.

Special power brakes can be supplied for forming extremely narrow flanges on heavy plates.

A Few of More Than 22,000 Users

	Quantity	
United States Navy	161	Tenn. Coal, Iron & R. R. Co.
U. S. Steel Corporation	28	Birmingham Stove & Range Co.
Standard Oil Company	12	United Verde Mining Co.
Ford Motor Company	40	Magma Copper Co.
Armour & Company	28	Missouri Pacific R. R.
Swift & Company	14	St. Louis Southwestern Ry.
General Electric Company	18	Holbrook Merrill & Stetson
Westinghouse Elec. & Mfg. Co.	16	California Cornice Works
Western Electric Company	15	Colo. Fuel & Iron Co.
American Car & Foundry Co.	17	C. A. Crosta
International Harvester Co.	16	Remington Arms Co.
Fisher Body Corporation	37	Trumbull Elec. Mfg. Co.
Packard Motor Company	10	United Fruit Co.
Buick Motor Company	11	Canadian Westinghouse Co.
Dodge Brothers Motor Co.	14	Canadian Gen. Electric Co.
Pittsburgh Transformer Co.	8	Worth Steel Co.
Liquid Carbonic Co.	13	American Vulcanizing Fibre Co.
Reo Motor Car Co.	12	Washington Terminal Co.
Eastman Kodak Company	6	U. S. Government
Pennsylvania R. R.	16	Bohner Sheet Metal Works
New York Central Railroad	21	C. H. Johnson
A. T. & S. F. Ry.	7	Conklin Tin Plate & Metal Co.
Chicago & Northwestern Ry.	11	Albany Tin & Metal Co.
C. M. & St. P. R. R.	10	Brizee Metal Works
C. B. & Q. R. R.	7	Oregon Short Line
C. R. I. & P. Ry.	5	A. M. Castle Co.
Illinois Central R. R.	6	Marshall Field & Co.
Union Pacific Railroad	12	Cole Mfg. Co.
Southern Pacific Railway	6	Farrell Mfg. Co.
Delco Light Company	5	Lyon Metallic Mfg. Co.
Fruit Growers Express Co.	8	Standard Metal Co.
Pacific Fruit Express	6	Hercules Body Co.
Boston & Maine R. R.	5	Wm. Warnock Co.
N. Y. N. H. & H. R. R.	8	Hart Parr Co.
Michigan Central R. R.	9	American Cornice Works
Northern Pacific R. R.	6	Pittsburg Cornice Works
Grand Trunk Railway	6	Mercury Body Corp.
Southern Railway	4	C. N. O. & T. P. R. R.
Pierce Arrow Motor Car Co.	5	B. V. Redmond & Son
Thomas Cusack Company	8	Texas & Pacific R. R.
American Can Company	24	Pepperell Mfg. Co.
Pullman Company	6	E. T. Burrows Co.
Du Pont Powder Company	6	Danzer Metal Works
Aluminum Corp. of America	4	Lyon Conklin & Co.
Bethlehem Steel Co.	5	Gilbert & Barker Mfg. Co.
Otis Elevator Company	3	Gray & Davis
Baldwin Locomotive Works	5	Lloyd Mfg. Co.
Anaconda Copper Co.	4	Clarage Fan Co.
B. F. Sturtevant Co.	8	Marshall-Wells Co.
United Shoe Machinery Co.	3	Farwell-Ozmun-Kirk & Co.
Troy Laundry Machinery Co.	3	Mississippi River Comm.
American Laundry Machinery Co.	4	Hattiesburg B. P. & S. M. Works
Detroit Shipbuilding Co.	4	Hammond Sheet Metal Co.
Pillsbury Flour Mills	4	Gille Mfg. Co.
Victor Talking Machine Co.	3	Chas. F. Clark Co.
Yellow Cab Mfg. Co.	6	C. G. Ray Co.
Stewart Warner Mfg. Co.	3	Eisemann S. M. Works
National Carbon Co.	6	Bjornson Sheet Metal Works
Goodyear Tire & Rubber Co.	4	Steptoe Smelt. & Min. Co.
Austin Machinery Co.	5	McLane Mfg. Co.
Diamond Match Company	3	New Jersey Zinc Co.
Cutler Hammer Mfg. Co.	7	N. Y. Shipbuilding Corp.
Follansbee Brothers Co.	4	Empire Zinc Co.
Wheeling Corrugating Co.	3	A. E. Holmes & Bro.
Inland Steel Company	3	H. Welch & Co.
S. F. Bowser & Co.	5	J. M. & L. A. Osborn Co.
Wayne Oil Tank & Pump Co.	5	Int. Motor Co.
Simmons Bed Company	12	Hershey Chocolate Co.
Tokyo Kentetsu Kaisha, Tokyo	6	Milwaukee Corrugating Co.

Chicago Steel Brakes are also used in over 300 schools.



Capacity 3-16 in. x 2 in. Bars; 10 Gauge Sheets

Chicago Steel Slitting Shear

Easiest operated and most durable hand bench shear on the market, indispensable for slitting sheet steel and for cutting steel bars, band iron, brake band lining, belting, etc.

Solid Forged Steel Construction. Shear blades made of highest grade crucible steel. Equipped with adjustable hold-down. All parts interchangeable.

Price \$12.50 net, f.o.b. Chicago. Weight 22 lbs.

Other Products Manufactured by Us

ATLAS CARRYALL OVERHEAD CONVEYING SYSTEM, a monorail system for industrial use to carry loads up to 4000 pounds.

ACME EYE SHIELD, an attachment for grinding wheels to protect eyes of workmen.

ANGLE BENDING ROLLS for forming circles of angle iron up to 2 x 2 x $\frac{3}{16}$ " capacity.

POWER PRESS BRAKES of steel construction, made to order in any length or capacity.

